

What is claimed is:

1. A device for recovering one or more volatile, organic anesthetic agents from a waste anesthetic gas, the device comprising:

5 an entrance port for accepting the waste anesthetic gas from the anesthetic gas system;

a bypass circuit, wherein the bypass circuit is employed should the air flow in the device become blocked or the power to the device be terminated;

means for moving the waste anesthetic gas stream through the device;

a first condensation chamber for removing water vapor from the waste anesthetic gas;

10 means for removing the condensed water from the first condensation chamber;

a second condensation chamber for recovering the one or more volatile, organic anesthetic agents from the waste anesthetic gas stream;

means for recovering the one or more condensed, recovered anesthetic agents from the second condensation chamber;

15 a storage canister or storage tank for holding the recovered anesthetic agents; and

means for evacuating the remainder of the waste anesthetic gas stream from the device.

2. The device of claim 1, wherein the one or more anesthetic agent is a potent, inhalational anesthetic agent.

20 3. The device of claim 2, wherein the one or more anesthetic agent is selected from the group consisting of isoflurane, desflurane, and sevoflurane.

4. The device of claim 1, wherein the device is connected in-line between an anesthesia machine and a vacuum port in an operating room.

25 5. The device of claim 1, wherein the means for moving the waste anesthetic gas stream through the device is provided by one or more pumps.

6. The device of claim 1 wherein the means for removing the condensed water from the first condensation chamber is provided by one or more pumps and the condensed water is removed by aerosolizing the water in a heat sink chamber.

7. The device of claim 1 wherein the means for recovering the one or more condensed, recovered anesthetic agents from the second condensation chamber is provided by one or more pumps and the recovered one or more anesthetic agents are moved from the condensation chamber to a storage canister or storage tank.

8. The device of claim 1 wherein the means for evacuating the remainder of the waste anesthetic gas stream from the device is provided by a wall suction port located in an operating room environment.

9. A method for recovering one or more volatile, organic anesthetic agents from a waste anesthetic gas, the method comprising:  
collecting the waste anesthetic gas;  
differentially condensing the one or more anesthetic agents from the other constituents in the waste anesthetic gas;  
recovering the one or more anesthetic agent.

10. The method of claim 9, wherein the one or more anesthetic agent is a potent, inhalational anesthetic agent.

11. The method of claim 10, wherein the one or more anesthetic agent is selected from the group consisting of isoflurane, desflurane, and sevoflurane.

12. The method of claim 9, wherein the condensing is accomplished in a cooled chamber.

13. The method of claim 12, wherein the chamber is cooled by a process selected from the group consisting of heat exchange methods and compression/re-expansion techniques.

14. The method of claim 9, wherein the one or more recovered anesthetic agent is recycled and reused.

15. The method of claim 9, wherein the waste anesthesia gas is dehumidified.
16. The method of claim 15, wherein the dehumidification is accomplished in a condensation chamber and wherein water is removed from the waste gas.
17. The method of claim 9, wherein the one or more recovered anesthetic agent is  
5 placed into a pressurized chamber.
18. The method of claim 16, wherein the condensation chamber is cooled by a process selected from the group consisting of heat exchange methods and compression/re-expansion techniques.
19. The method of claim 18, wherein the water is aerosolized or evaporated into  
10 air that is heated by a hot side of a heat exchange device.
20. A device for recovering one or more volatile, organic anesthetic agents from a waste anesthetic gas, the device comprising:
- an entrance port for accepting the waste anesthetic gas from the anesthetic gas system;
  - 15 a bypass circuit, wherein the bypass circuit is employed should the air flow in the device become blocked or the power to the device be terminated;
  - one or more pumps for moving the waste anesthetic gas stream through the device;
  - a first condensation chamber for removing water vapor from the waste anesthetic gas;
  - one or more pumps for removing the condensed water from the first condensation  
20 chamber;
  - a second condensation chamber for recovering the one or more volatile, organic anesthetic agents from the waste anesthetic gas stream;
  - one or more pumps for recovering the one or more condensed, recovered anesthetic agents from the second condensation chamber;
  - 25 a storage canister or storage tank for holding the recovered anesthetic agents; and
  - a vacuum supply for evacuating the remainder of the waste anesthetic gas stream from the device.